Washington State On-Site Wastewater Technical Review Committee

Minutes for the February 6-7, 2002Meeting

Approved on April 17, 2002 by Vote of the Committee

Washington State Department of
Health

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MEETING ATTENDEES

Members Present

1. Kevin Barry, Eastside Env. Hlth
2. Pam Denton, LHJ Field Staff
3. Scott Jones, Engineers
4. Melanie Kimsey, Dept of Ecology
5. Eric Knopf, Designers, Installers, O&M
6. Bob Monetta, Wash. Assoc. of Realtors
7. Bill Peacock, Public Sewer Utilities
8. Tom Rogers, Proprietary Devices
9. Mike Vinatieri, Westside Env. Hlth

DOH Staff

1. Laura Benefield, Wastewater Mgt Program
2. Kelly Cooper, Leg. & Regulatory Office
3. Virginia Darrell, Wastewater Mgt. Program
4. John Eliasson, Wastewater Mgt Program
5. Selden Hall, Wastewater Mgt Program
6. Dave Lenning, TRC Coordinator

Guests Who Signed In or Presented

1. Dave Hilton, Okanogan Co. Health Dept.
2. Peter Lombardi, Orenco Systems Inc.
3. Dale M. Dunnells, Infiltrator Systems, Inc.
4. Shaun Morgen, Advanced Drainage Systems
5. Jim Patterson, Five Star Environmental Services, Inc.
6. Tom Teal, Glendon Biofilter Technologies
7. Lou Hagler, Evergreen Multi-Flo
8. Dennis F. Hallahan, Infiltrator Systems, Inc. (Day 2 only)
9. Bill Chapman, Preston Gates for Infiltrator Systems, Inc. (Day 2 only)

INTRODUCTION

Bob Monetta, Chair, called the meeting to order at approximately 8:20 a.m. on February 6, 2002 and at 8:05 am on February 7, 2002 in the Tamarack Room of the Courson Conference Center at Central Washington University in Ellensburg. The meeting on Day 1began with brief introductions by each committee member, DOH staff, and the interested parties in the audience.

MINUTES

December 12, 2001 Meeting Minutes Adoption – By unanimous vote, the committee approved the December 12, 2001 TRC meeting minutes without changes.

FUTURE MEETING SCHEDULE

After discussion of Category 1 ATUs being used at Category 2 sites, but prior to the discussion on Issue #3 on Glendon Biofilters, the schedule for the balance of 2002 was discussed. This was done because the representative from Glendon had not yet arrived. The following schedule for 2002 meetings was developed, all of which will be held in the meeting room at the Best Inn in Ellensburg:

April 17-18, 2002
June 5-6, 2002
August 14-15, 2002
October 2-3, 2002 (Subsequently changed to October 9-10 due to hotel scheduling error)
December 4-5, 2002

SUMMARY OF TECHNICAL DISCUSSIONS

1. **Interim Allowance for Use of Category 1 ATUs at Category 2 Sites**
    a. Laura Benefield gave a brief history of the situation and described the data that she had been able to collect. Item #1 includes the information she presented.
    b. Eric Knopf raised a question about the large influent numbers and the low effluent numbers – are they realistic?
    c. Scott Jones questioned what kind of O&M requirements existed and were being met. O&M is somewhat in limbo right now. Laura responded that there is currently no clear responsibility assigned for O&M and for data submittals.
    d. Testing protocol had not yet been developed.
    e. Tom asked what was going on at local levels. The response was that approval was being given without the engineering requirement being met. Mike Vinatieri added that there were many ATUs approved, but few of them were for category 2 or 3 uses. There was a problem getting good reporting.
    f. Laura concluded by asking the following questions: Should the interim allowance be extended? If the interim allowance is extended, how long should the extension be?

g. ***Motion:*** Scott Jones **- Extend the current interim allowances for category 1 ATUs to be used for Category 2 uses until July 31, 2003 or earlier if a final decision is made in the rule development/revision process being undertaken by the Department of Health**
   - ***Second*****:** Bill Peacock
   - ***Vote*****: Yes – 9 No – 0**

h. Scott Jones - DOH should send a letter to local health jurisdictions asking for information on ATU performance. Local jurisdictions should request performance information from installers and/or O&M personnel. DOH should at least be notified when a permit is issued.

i. Bill Peacock – It is the manufacturer's responsibility to set capabilities and monitoring protocol and frequencies.

j. Kevin Barry – the designer/engineer should specify the protocol and the local health jurisdiction should then evaluate and decide if it was satisfactory or if changes were needed.

k. Tom Rogers – The TRC did a lot of work on Category 3 protocol. That protocol should be examined when we look at the protocol for this situation.

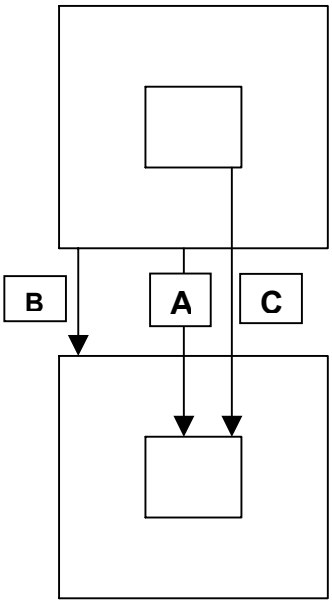
2. Glendon Biofilters – RS&G Development – One issue remained from the December 12, 2001 meeting for the committee to discuss and develop a

a. Issue #3 – Horizontal separation (setback) requirements

- Selden Hall from DOH handed out a document (Item #3 – which was the last page of his handout from the December 12, 2001 meeting) containing information on the issue. He concluded his presentation with a question: **Should the proposed setbacks in his presentation be included in the RS&G? Setbacks are to be measured from the edge of the required absorption area boundary (the edge of the 100% full absorption area or, if the reserve area is contiguous downslope, from the edge of the reserve area).**
- Kevin Barry – Has the work Selden did on this cause him to suggest that the setbacks for mounds be revisited? Answer from Selden: Yes
- Bill Peacock – How do you make the jump from 30 feet for <18inches of soil depth to 5 feet for ≥ 18 inches? Answer from Selden: This is based on the current rule. It is assumed that the wastewater stays below the soil's surface.
- Tom Teal from Glendon Biofilter – Typically for new construction, there are two designated tiers across the slope, with the bottom tier usually (80-90% of installations) saved for the reserve area.
- Questions were asked about where the measurements should be from when there are downslope Glendon Biofilter units. He suggested that the setbacks should be measured from basin edge to basin edge (noted as distance **C** in the figure on the next page).

- ***Motion:*** Scott Jones – On a sloped site (>5%) the horizontal setback between two Glendon units be measured from the downslope toe of the upper unit to the upslope basin edge of the downslope unit (noted as **A** in the figure on the next page)
  - ***Second:*** Kevin Barry
  - ***Vote:*** **Yes – 9 No – 0**

- ***Motion:*** Kevin Barry – On flat sites (≤ 5%), stacking of Glendon units should be "stacked" in one horizontal dimension only. If the stacking of units in 2 horizontal dimensions is proposed, then the setback should be measured from the downslope toe of the upslope unit to the upslope toe of the downslope unit (dimension **B** in figure below).
  - ***Second*:** Scott Jones
  - ***Vote*:** **Yes – 9 No – 0**



- Tom Teal – He has received more detail on performance of Glendon Biofilters from operational tests of sand specs from the project in British Columbia. He will give the information to Selden, who will pass it on to the TRC if he determines it's desirable.

3. Technical Issue #2 – Hydraulic Loading Rates

a. Prior to discussion on this topic, Tom Rogers suggested that one method of organizing information in the staff reports would be: **Where are we now? Why are we looking at this issue? Where should we go? How do we get there?**
b. John Eliasson, using the report form for his topic (Item #3), presented information from his research into the topic of hydraulic loading rates. He discussed where we have been (current loading rate requirements are based on the existing EPA manual with modifications suggested primarily by Dr. Craig Cogger) and what is being proposed in the latest draft of the upcoming EPA on-site wastewater manual. Included in that draft (also on page 10 of John's report) is a table of suggested hydraulic loading rates based on soil texture, structure, grade of structure, and cleanliness of effluent based on BOD. This is a balance between what has been formerly done and what is being done by a few states who are requiring more detailed soil morphological information.
c. Most of the discussion centered around the first question asked in John's report: **"What are important factors affecting hydraulic loading rates that need to be considered?"** Following are comments/points made as part of that discussion:
   - There was a request made to find out what other states are doing, especially those that are really emphasizing soil morphological characteristics.

- In addition to hydraulic loading rates, we need to look at dosing regimes.
- There is a need to look at the relationship between hydraulic loading rates and the method of distribution.
- We need to look at the relationship between wastewater quality and loading rates – this is being looked at in other technical issues.
- We need to look at coarse fragments (gravels and bigger) and clay mineralogy. The definition of "extremely gravelly" needs especially close evaluation.
- Kevin Barry, stated there is not a need for a more complicated table of numbers if we can't assure they are based on good science.
- Maybe we should deal with a range of loading rates for each soil type. The final decision can be left up to the local health jurisdictions. There was a concern stated that it's too easy to go with the minimum or maximum when using ranges.
- There is a problem if specific numbers are not put into the regulations
- The members would like copies of papers from the early 1990s until the present time that deal with this topic, especially those from Tyler that support his current thoughts.
- Generally, among the committee members, with the exception of Kevin Barry, there was support for Tyler's table, but some changes would be recommended. The recommended changes need to be identified.
- John Eliasson stated that Craig Cogger, soil scientist with WSU, had been involved in establishing the current loading rates. He suggested that Craig be contacted for assistance. Melanie Kimsey suggested these discussions also include Lisa Pilazzi.

d. Discussion surrounding the second question asked in John's report then occurred: **Should the sidewall area be included as an active infiltration surface in sizing the SSAS?** John indicated that the literature implies that effluent has to pond in order for the sidewall to be used as an infiltration surface.
   - **Motion:** Scott Jones – Sidewall should not be included in sizing a drainfield. Only the bottom area should be considered for sizing purposes.
     - **Second:** Melanie Kimsey
     - **Vote: Yes – 8 No – 0 Not voting – 1 (Kevin Barry had left the meeting)**

e. A suggestion was made that there are other issues that will arise during various discussions that may not be part of the technical issues being discussed and that a record of these decisions be kept and made available to the RDC. Two issues were put on this list:
   - A repair permit should require an assessment of contributing causes to the problem.
   - All systems should be designed for full-time usage.

f. Interested parties in attendance asked questions about how they can receive detail of discussion items in advance of meetings. Dave indicated he would ask about how this can be done and will report back. Bob Monetta suggested that the interested party "sign-in" form include columns wherein an individual can request information for TRC and/or RDC meetings.

g. The **"To Do"** list arising from this discussion:
   - DOH staff to find out what other states that may be using a more detailed soil morphology assessment are doing.
   - In addition to hydraulic loading rates, look at their relationship to dosing regimes.

- Look at the relationship between hydraulic loading rates and the method of distribution
- Look at coarse fragments and their effect on loading rates. Especially look at the definition of "extremely gravelly."
- Get copies of papers from the early 1990s through the present time that speak to the issue of hydraulic loading rates, especially those that were used by Tyler to develop his current recommendations as noted in the table discussed.
- Talk to Craig Cogger and Lisa Pilazzi

Day 2 – February 7, 2002

4. Technical Issue #3 - Organic Loading Rates

a. Virginia Darrell, using the report form for her topic (Item #4), presented information from her research into the topic of organic loading rates. The primary question asked in her report was: **"Should, and by what approach, organic loading be addressed in system design?"**
   - Virginia discussed the two primary design options – 1) Pretreat the sewage so the effluent is similar to the quality of residential septic tank effluent or 2) Size infiltrative surfaces based on organic strength (e.g. pounds of BOD/square foot/day).
   - Virginia discussed the calculations needed that can get us to organic loading rates. The detail is in her report.
   - Currently, the WAC requires designers to bring the wastewater strength down to residential quality.
   - LOSS guidelines allow the use of organic loading rates where the BOD is less than 500 mg/l, but the method for doing that is not clear.
   - Some design professionals currently use methods like the loading rates explained by Virginia for designing repair systems, especially for commercial facilities.
   - There is probably a need for pressure distribution, but there is a concern of the effect the wastewater quality will have on the system.
   - Virginia stated that Florida suggests a limit of 1.5 pounds of BOD per day per 1000 square feet of drainfield.

b. The following comments/points were made in the ensuing discussion:
   - There are concerns the validity of assumptions that the current hydraulic loading rates and BOD being correct.
   - The minimum quantity and quality for new residential home construction needs to be better defined. **Add to list of comments to be made to RDC. (This is related to the comment above… in other words: Do we know enough about typical residential waste strength and design flows to use that information as a basis for a decision on organic loading?)**
   - Pam Denton & Mike Vinatieri noted concerns with agencies such as the Dept. of Agriculture (approving small bakeries, candy making operations, etc.) and DSHS (approving day cares, transient accommodations, etc.) without getting involvement from local health jurisdictions. She was concerned about the effects of the wastewater quality from such operations on the OSS. **Add to list of comments to be made to RDC.**
   - There is a need to further educate and question homeowners about their system and lifestyles.

- There is a need to look at the big picture – quantity, quality, need for ongoing operation and maintenance, etc. We need to look at all of them collectively, not just at one or the other.
- What affect does climate have on loading rates, especially in areas with high precipitation rates?

c. **Where should we go?**
- Define minimum quantity and quality for new residential construction.
- As per the current WAC, in the new WAC place the requirement for pretreating to residential quality.
- In a RS&G discuss the other option of designing/sizing a drainfield based on organic strength – e.g. pounds of BOD/square foot/day.
- Recommend pressure distribution, but look at what affect the wastewater quality may have on the system. This will be placed in the RS&G, if that's where the allowance for the second design option of sizing a drainfield on organic strength goes.

d. The **"To Do"** list arising from this discussion:
- Define minimum quality and quantity for new residential construction (This will be a part of Issue # 7.)
- Look into effects climate, especially high precipitation areas, have on loading rates. (This is a part of Issue # 2.)
- Look further into the need for pressure distribution and effects high strength wastes may have on the system

5. Technical Issue #4 – Disposal Component Reductions

a. Prior to Selden Hall's presentation his report, Melanie Kimsey requested that she have 30 minutes on the next agenda to provide information to the committee on the difference between capillary action and saturated flow.

b. Selden Hall, using the report form and a PowerPoint presentation for his topic (Item #5), presented information from his research into the topic of hydraulic loading rates.
- Selden stated there are two pathways currently available for obtaining reductions in sizing disposal components
  - Highly pretreated effluent being applied to the infiltrative surface – **this is the topic of this discussion**
  - Special features and applications of alternative drainfield products – **this will be the subject of another report**
- He summarized what is currently done in applying size reductions based on applying highly pretreated effluent to infiltrative surfaces.
- The primary driver for increasing loading rates for pretreated effluent has been hydraulic, not necessarily treatment.
- He noted concerns stated by researchers of the increase in loading rates potentially driving microorganisms deeper into the soil profile because clogging mats are no longer present. Combining increased loading rates and reduced vertical separations increase this concern. At best, these relationships are not well understood and need further assessment.
- Additionally, there is the question of how much primary and reserve area should be available and saved when reductions are used.
- He made the following recommendations (noted on page 6 of the report):
  - Sizing reductions to absorption areas make sense hydraulically when applying highly treated wastewater to an infiltrative surface

- Sizing reductions to the absorption area should be based on soil type to which the highly treated effluent is being applied.
- Sizing reductions based on highly pretreated effluent should incorporate in the system design features to assure unsaturated flows. Increased hydraulic loading rates should not be combined with reduced vertical separations if both are being allowed due to the application of highly pretreated effluent.
- Be cautious about the allowance of reduced drainfields until the transport and fate of pathogens has been investigated.
- For public health protection, two additional requirements must accompany reductions in absorption areas: 1) monitoring and maintenance of the pretreatment component (to assure it continues to produce good quality effluent) and 2) full area set-asides for both the primary and secondary absorption areas.

c. The following comments/points were made in the ensuing discussion:
   - John Eliasson stated that Bob Siegrist, one of the on-site wastewater researchers, suggested a maximum loading rate of 3-5 percent of saturated conductivity.
   - Concern with doubling up reductions (increased loading rates and reduced vertical separations) was noted.
   - Pressure distribution should be required
   - **Motion:** Mike Vinatieri – For any reductions to be permitted, two additional requirements should exist: 1) monitoring and maintenance of the pretreatment component (to assure it continues to produce good quality effluent) and 2) full area set-asides for both the primary and secondary absorption areas.
     - **Second:** Kevin Barry
     - **Vote:** **Yes – 8 No – 1** (Tom Rogers questioned the need for a full set-aside area for the primary area)
   - Pam Denton stated that according to the current WAC, with pretreated effluent we could use a gravity system with a minimum vertical separation of 12 inches. She asked, "Does this make sense?" It was recommended that this be dealt with in the discussion of Technical Issue #9 (Table IV soil depth issues).
   - Melanie Kimsey suggested the committee look at reductions of vertical separation when using pretreated effluent, especially when combining with increased loading rates, when considering technical issue #9.

d. The **"To Do"** list arising from this discussion:
   - Look into the need for pressure distribution if reductions are permitted, either in sizing or vertical separation. Make sure this is dealt with either in this issue or in issue #9.
   - Look into the need for a full set-aside for the primary system.
   - Discussion on reductions due to special features or applications of disposal component alternatives. Selden Hall will send out a request to the gravelless technology companies asking for scientific information they may have on this topic.
   - Look into the stacking or combination of reductions.

ADMINISTRATIVE/OTHER ISSUES

1. Dave Lenning handed out 3-ring binders in which the TRC members can organize the technical issues they discuss
2. Kelly Cooper reminded the committee that the WAC revision process will require a detailed assessment of benefit and cost. Thus, if the committee can consider this as it makes its recommendations, it would be helpful. DOH staff will attempt to speak to this in their reports.
3. John Eliasson reminded the committee that he was starting to work on Technical Issue #1 – Treatment Standards 1 & 2. This would be ready for some discussion at the next meeting. Mike Vinatieri indicated he had developed a "white paper" on this topic and that Dave Lenning had reviewed it and issued a response. He suggested that this be sent out to committee members prior to the next meeting's discussion on this topic.
4. Technical Issue #1 also needs to look at how good an indicator fecal coliform really is. Also, the use and effectiveness of disinfection needs to be assessed, since most systems require disinfection to achieve either of the treatment standards.
5. Items from this meeting, not specifically related to one of the technical issues being discussed, that should go on a list to be passed on to the RDC:
    a. A repair permit should require an assessment of contributing causes to the problem.
    b. All systems should be designed for full-time usage
    c. Better definitions for the minimum quantity and quality for new residential home construction are needed.
    d. Agencies such as the Dept. of Agriculture (approving small bakeries, candy making operations, etc.) and DSHS (approving day cares, transient accommodations, etc.) need to involve local health jurisdictions prior to issuing approval.
6. The meeting was adjourned

MEETING MATERIALS[1]

Administrative/Other Materials

Meeting Agenda - February 6-7, 2002

Item #1 – Interim Allowance Extension Proposal – submitted by Laura Benefield

Item #2 – Horizontal separation (setback) requirements – submitted by Selden Hall

Item #3 – Rule Development Committee Issue Research Report on Issue T2, Hydraulic loading rates – submitted by John Eliasson

Item #4 – Rule Development Committee Issue Research Report on Issue T3, Organic loading rates – submitted by Virginia Darrell

Item #5 – Rule Development Committee Issue Research Report on Issue T4, Disposal Component Reductions – submitted by Selden Hall

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[1] All listed meeting materials are maintained by the Department of Health in a meeting manual entitled*: Technical Review Committee Meeting, February 6-7, 2002*. For further information, please contact the Department of Health's Wastewater Management Program at (360) 236-3062.